Mobile Base Installation Guide

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TABLE OF CONTENTS

List of Figures iii

Chapter 1 Mobile Base Installation

Conventions Used In This Manual 1-1
Technical Support 1-1
Parts List 1-2
Preparation 1-3
- Removing the Hood 1-3
- Removing the Eddy Current Brake 1-4

Installation 1-6
- Moving the Dyno to the Mobile Base Frame 1-6
- Moving the Brake to the Mobile Base Frame 1-8
- Installing the Wheels to the Mounting Brackets 1-10
- Installing the Rear Wheel Mount Assemblies 1-11
- Tightening All the Bolts 1-12
- Installing the Front Wheel Mount Assembly 1-12

Eddy Current Brake 1-13
- Aligning the Eddy Current Brake 1-13
- Coupling the Eddy Current Brake 1-14
- Attaching the Cables 1-15
- Securing the Input Power Cable and Cable Tie 1-16

Final Installation 1-17
- Modifying and Installing the Hood 1-17
- Installing the Ground Hooks 1-18
- Securing the Dyno 1-19

Appendix A Red Head Anchor Installation

Warnings A-1
Contact Information for ITW Ramset/Red Head A-1
Installation A-2

List of Figures

Figure 1-1: Remove the Brake Cover and Hood Clamps 1-3
Figure 1-2: Remove the Hood. 1-4
Figure 1-3: Remove the Temperature Sensor Wires 1-4
Figure 1-4: Remove the Eddy Current Brake Cables 1-5
Figure 1-5: Remove the Eddy Current Brake 1-5
Figure 1-6: Place the Mobile Base Frame on Blocks 1-6
Figure 1-7: Place the Dyno on the Mobile Base Frame. 1-6
Figure 1-8a: Loosely Attach the Mobile Base Frame to the Dyno 1-7
Figure 1-8b: Loosely Attach the Mobile Base Frame to the Dyno 1-7
Figure 1-9: Place the Brake on the Mobile Base Frame. 1-8
Figure 1-10: Attach the Brake to the Dyno 1-8
Figure 1-11: Install the Reinforcement Brace. 1-9
Figure 1-12: Loosely Secure the Mobile Base Frame to the Brake 1-9
Figure 1-13: Install the Wheel to the Rear Wheel Mounting Bracket . . . 1-10
Figure 1-14: Install the Wheel to the Front Wheel Mounting Bracket. . . 1-10
Figure 1-15: Remove the Existing Bolts 1-11
Figure 1-16: Install the Rear Wheel Mount Assemblies. 1-11
Figure 1-17: Tighten the Mobile Base Frame Bolts 1-12
Figure 1-18: Install the Front Wheel Mount Assembly 1-12
Figure 1-19: Align the Eddy Current Brake 1-13
Figure 1-20: Secure the Couplers 1-14
Figure 1-21: Attach the Eddy Current Brake Cables 1-15

Figure 1-22: Attach the Temperature Sensor Wires to the Breakout Board 1-16
Figure 1-23: Secure the Input Power Cable and Cable Tie 1-16
Figure 1-24: Modified Hood Measurements 1-17
Figure 1-25: Install the Modified Hood 1-17
Figure 1-26: Ground Hook Placement 1-18
Figure 1-27: Install the Ground Hook. 1-18
Figure 1-28: Secure the Dyno to the Rear Ground Hooks 1-19
Figure 1-29: Secure the Dyno to the Front Ground Hook 1-19
Figure A-1: Red Head Anchor—Drill the Hole A-2
Figure A-2: Red Head Anchor—Insert the Anchor. A-2
Figure A-3: Red Head Anchor—Drive the Anchor Flush A-3
Figure A-4: Red Head Anchor—Expand the Anchor A-3

CHAPTER

1

MOBILE BASE INSTALLATION

This document provides instructions for installing the mobile base to Dynojet's Model 250 Dynamometer (dyno). To ensure safety and accuracy in the procedures, perform the procedures as they are described.

This manual will walk you through the installation procedures, wiring, and how to secure your dyno using anchors and ground hooks.

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CONVENTIONS USED IN THIS MANUAL

The conventions used in this manual are designed to protect both the user and the equipment.

example of convention	description
	The Caution icon indicates a potential hazard to the dynamometer equipment. Follow all procedures exactly as they are described and use care when performing all procedures.
	The Warning icon indicates potential harm to the person performing a procedure and/or the dynamometer equipment.

TECHNICAL SUPPORT

For assistance, please contact Dynojet Technical Support at 1-800-992-3525, or write to Dynojet at 2191 Mendenhall Drive, North Las Vegas, NV 89031.

Visit us on the World Wide Web at www.dynojet.com where Dynojet provides state of the art technical support, on-line shopping, 3D visualizations, and press releases about our latest product line.

PARTS LIST

The following table lists all of the parts included in the mobile base installation kit. Check your kit against the parts listed to make sure you have received all of the parts. If any part is missing, contact Dynojet Technical Support.

part number	description	quantity
197104130	4" Zip Tie	4
33915201	Caster-Truck, Black, 5" Wheel	3
33990001	Caster Brake Kit	2
36488100	Nut, 3/8-16, Nylock	12
36491100	Nut, 7/16-14, Hex	10
36560834	Screw, 1/4-20 x 1/2", Button-head	1
36581270	Bolt, 3/8-16 x 3/4", W/Tlok	4
36581670	Bolt, 3/8-16 x 1", W/Tlok	10
36591670	Bolt, 7/16-14 x 1", Hex	10
36708100	Nut, 1/2-13, Nylock-Hex	6
36801240	Bolt, 1/2-13 x 1-1/2", Hex	6
36933100	Washer, 7/16", Flat, Stl	20
36943100	Washer, 1/2", Flat, Stl	12
37518200	Tool-Installation, Red Head Anchor	1
43411630	Cable Tie, 16", Black, 120 lb	1
500-C10	Car Tie Down 2" x 10'	3
61327100	Front Caster Mounting Assembly	1
61327300	Caster Bracket Assembly	2
61327600	Frame-Mobile Base	1
61327810	Brace Assembly	1
79190001	Ground Hook Kit	3
DM150-002-007	Washer, 5/16", Flat	24
DM150-011-002	Washer, 3/8", Flat	14
DM150-019-012	Bolt, 3/8-16 x 1", Hex	12
DM150-019-014	Washer, 7/16", Lock	10

PREPARATION

You will need to provide equipment capable of lifting a minimum of 1600 lb (725 kg) to lift the dyno. You will also need a pair of straps capable of supporting the weight of the dyno. Several types of straps or chains can be used to lift the dyno; Dynojet recommends using a continuous nylon loop style strap.

Dynojet recommends you remove the fan assembly, if you have one installed, before beginning installation. This will keep the dyno stable during placement on the mobile base.

REMOVING THE HOOD

1 Disconnect all power to the dyno.

2 Remove the four bolts securing the eddy current brake cover and set aside.

Note: Place the four bolts you just removed back into the hood to prevent misplacement.

3 Remove the two bolts securing the hood clamps to the brake and set aside.

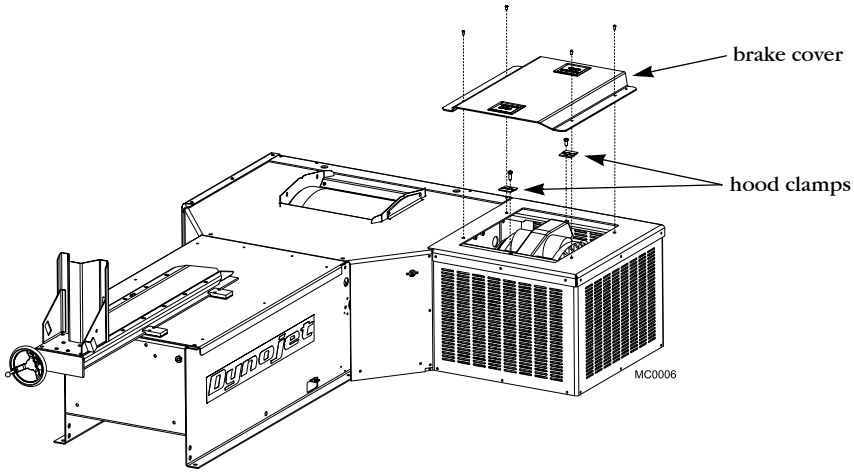

Figure 1-1: Remove the Brake Cover and Hood Clamps

4 Remove the four bolts securing the hood to the dyno and prop up the hood.

5 Disconnect the wires to the key switch if present.

6 Remove the hood from the dyno and set aside.

7 Disconnect the battery.

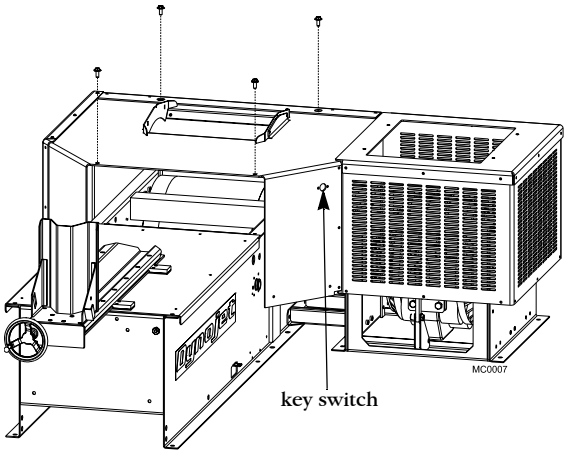

Figure 1-2: Remove the Hood

Removing the Eddy Current Brake

1 Remove the following cables and wiring.

1a Remove the four screws securing the Breakout board and cover. Set the cover and screws aside.

1b Disconnect the temperature sensor cable from the Breakout board. The temperature sensor cable has five wires which connect to the wiring block labeled TEMP.

- Green wire connects to G1
- Black wire connects to B1
- Ground wire connects to S1
- White wire connects to W1
- Red wire connects to R1

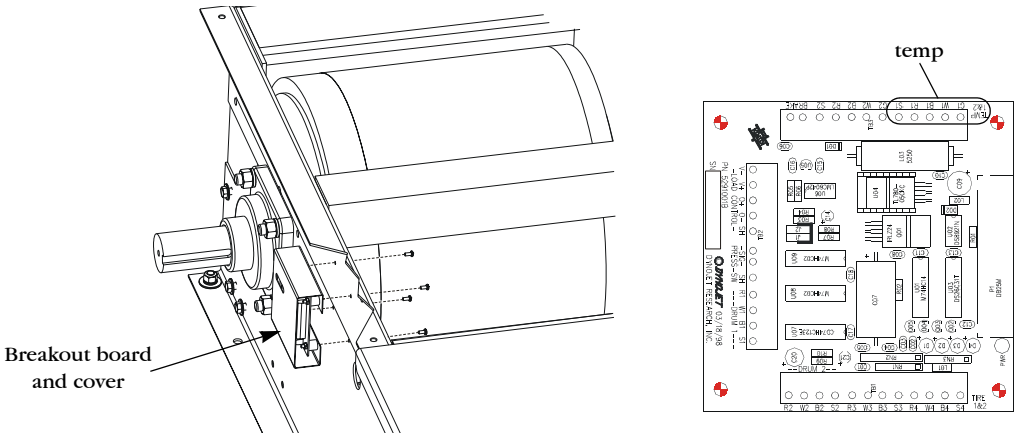

Figure 1-3: Remove the Temperature Sensor Wires

1c Remove the temperature sensor cable from the dyno.

1d Disconnect the input power cable from the Theta Controller.

1e Disconnect the brake power cable from the Theta Controller.

1f Remove the large rubber grommet from the hole in the dyno and remove the brake power cable from the dyno.

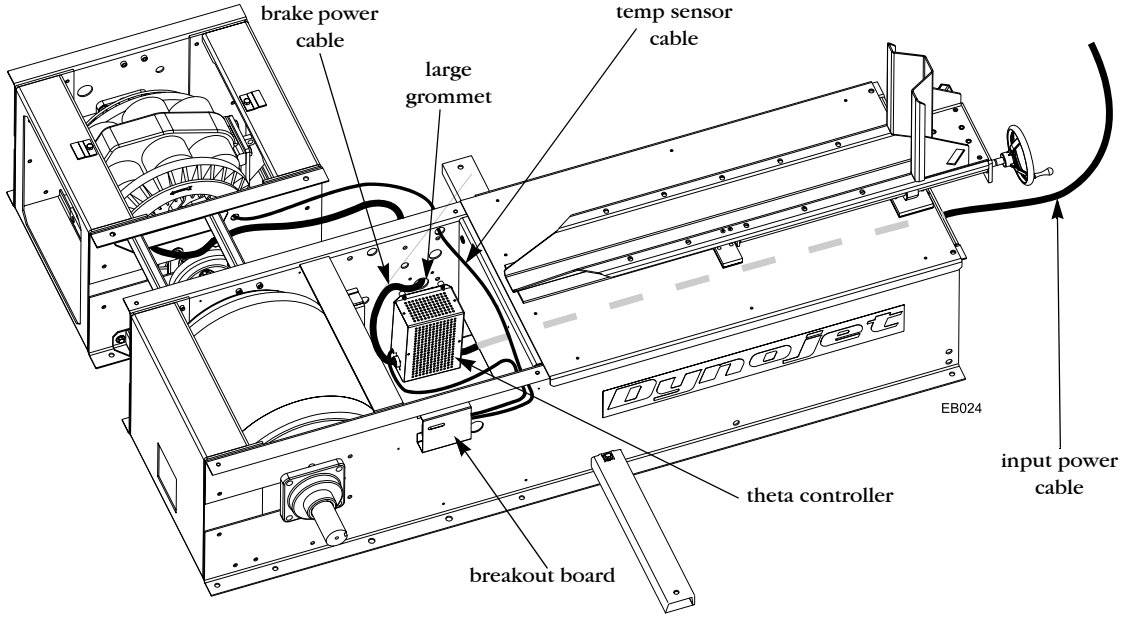

Figure 1-4: Remove the Eddy Current Brake Cables

2 Remove the eddy current brake.

2a Remove the three bolts securing the couplers and set aside.

2b Remove the bolts and washers securing the connecting arms to the dyno and set aside; there are four bolts securing each arm.

2c Slide the eddy current brake away from the dyno.

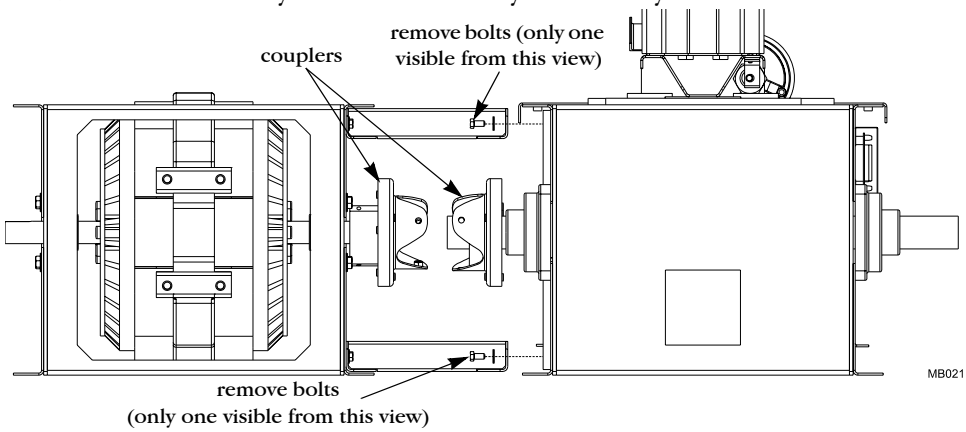

Figure 1-5: Remove the Eddy Current Brake

INSTALLATION

You will need to provide equipment capable of lifting a minimum of 1600 lb (725 kg) to lift the dyno. You will also need a pair of straps capable of supporting the weight of the dyno. Several types of straps or chains can be used to lift the dyno; Dynojet recommends using a continuous nylon loop style strap.

MOVING THE DYNO TO THE MOBILE BASE FRAME

1 Place the mobile base frame on blocks as shown in Figure 1-6. The blocks need to raise the base frame at least four inches off the floor.

Figure 1-6: Place the Mobile Base Frame on Blocks

2 Using a fork lift and nylon loop straps, move the dyno onto the mobile base frame. Do not put the full weight of the dyno onto the frame until step 4.

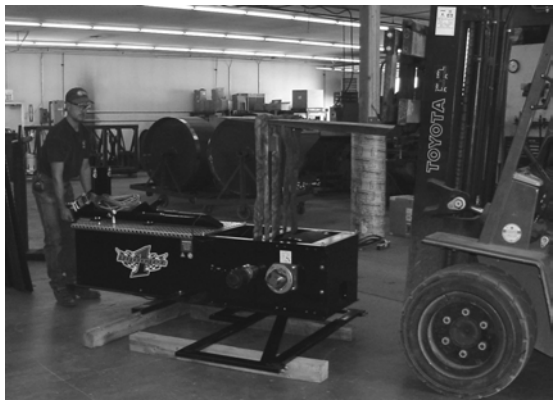

Figure 1-7: Place the Dyno on the Mobile Base Frame

3 Loosely attach the mobile base frame to the dyno using six 7/16-14 x 1-inch bolts, twelve 7/16-inch flat washers, six 7/16-inch lock washers, and six 7/16-inch nuts. Refer to Figure 1-8a and Figure 1-8b.

Note: Be sure the bolts are inserted from the bottom of the mobile base frame.

4 Line up the mobile base frame with the dyno and lower the dyno onto the frame.

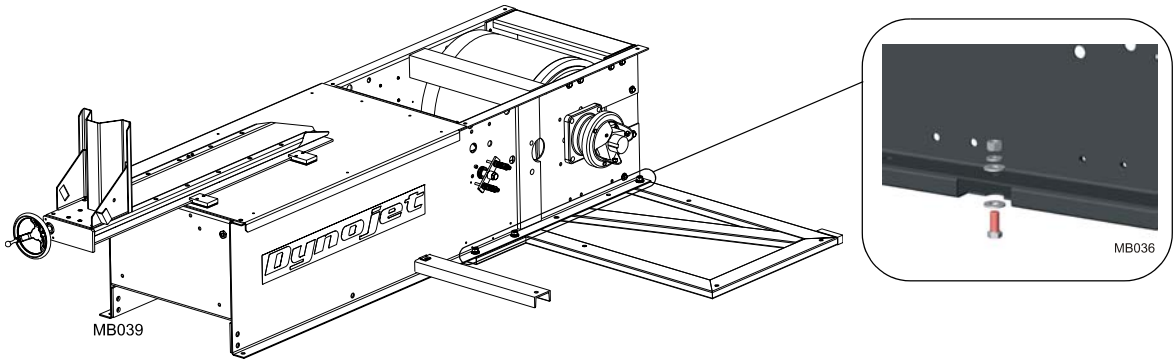

Figure 1-8a: Loosely Attach the Mobile Base Frame to the Dyno

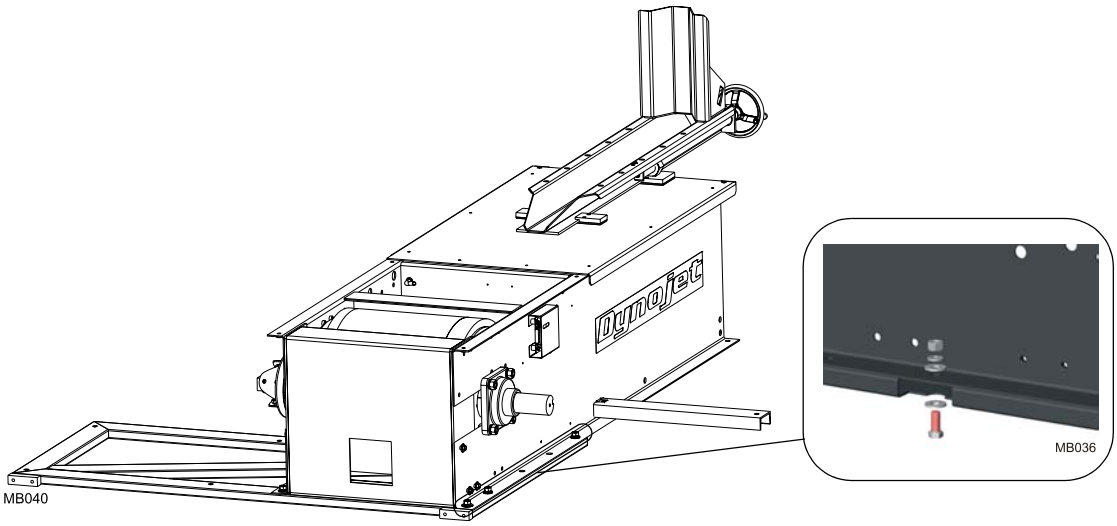

Figure 1-8b: Loosely Attach the Mobile Base Frame to the Dyno

Moving the Brake to the Mobile Base Frame

1 Using a fork lift and nylon loop straps, move the eddy current brake onto the mobile base frame.

Figure 1-9: Place the Brake on the Mobile Base Frame

2 Slide the brake up to the dyno.

3 Loosen the bolts on the brake connecting arms to allow the arms to move. There are four bolts on each arm.

4 Line up the connecting arms with the dyno and loosely attach the arms to the dyno using the bolts and washers you removed earlier. These bolts need to remain loose in order to align the brake.

5 Tighten the bolts securing the connecting arms to the brake.

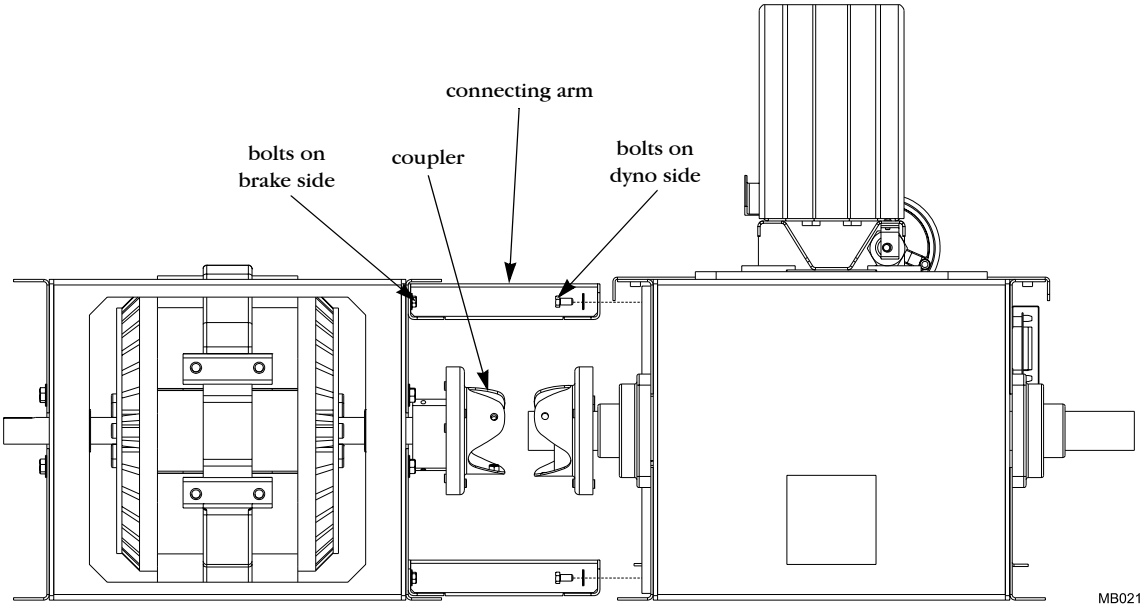

Figure 1-10: Attach the Brake to the Dyno

6 Install the reinforcement brace.

6a Remove and discard the two bolts on the brake and the two bolts on the dyno.

6b Loosely secure the reinforcement brace using four 3/8-16 x 1-inch bolts with thread lock and four 3/8-inch washers (two on the brake side and two on the dyno side).

For better clarity, the coupler is not shown in Figure 1-11.

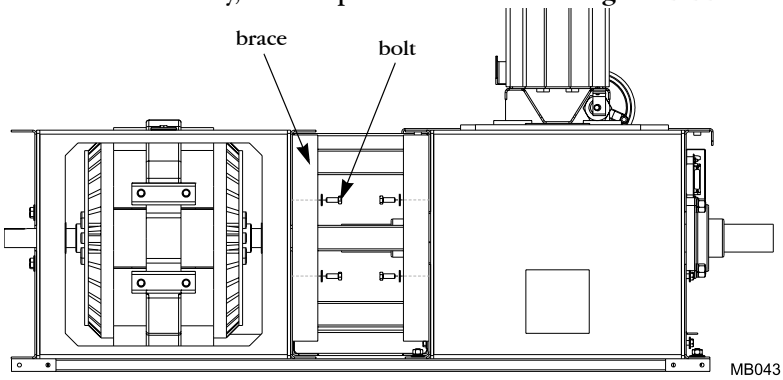

Figure 1-11: Install the Reinforcement Brace

7 Loosely attach the mobile base frame to the brake using four 7/16-14 x 1-inch bolts, eight 7/16-inch flat washers, four 7/16-inch lock washers, and four 7/16-inch nuts. For better clarity, the reinforcement brace does not appear in Figure 1-12.

Note: Be sure the bolts are inserted up from the bottom of the mobile base frame.

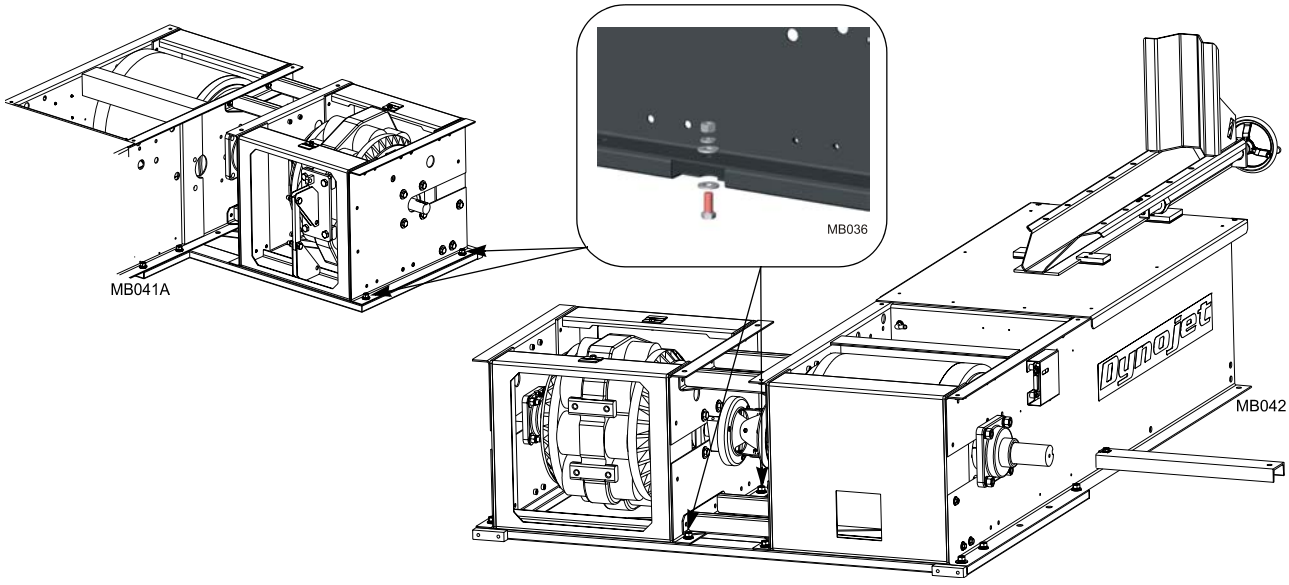

Figure 1-12: Loosely Secure the Mobile Base Frame to the Brake

INSTALLING THE WHEELS TO THE MOUNTING BRACKETS

1 Install the wheel with the brake to the rear wheel mounting bracket using four 3/8-16 x 1-inch bolts, eight 5/16-inch flat washers, and four 3/8-inch nylock nuts. Do this for both rear wheel mounting brackets.

Be sure to use the wheels with the brake for the rear wheel mount assemblies.

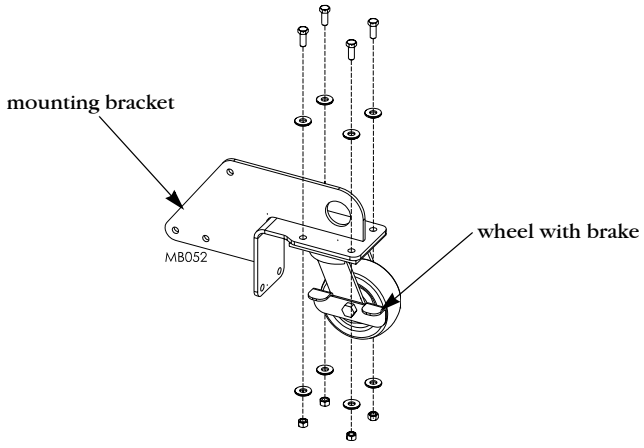

Figure 1-13: Install the Wheel to the Rear Wheel Mounting Bracket

2 Secure the remaining wheel to the front wheel mounting bracket using four 3/8-16 x 1-inch bolts, eight 5/16-inch flat washers, and four 3/8-inch nylock nuts.

The front wheel does not have a brake.

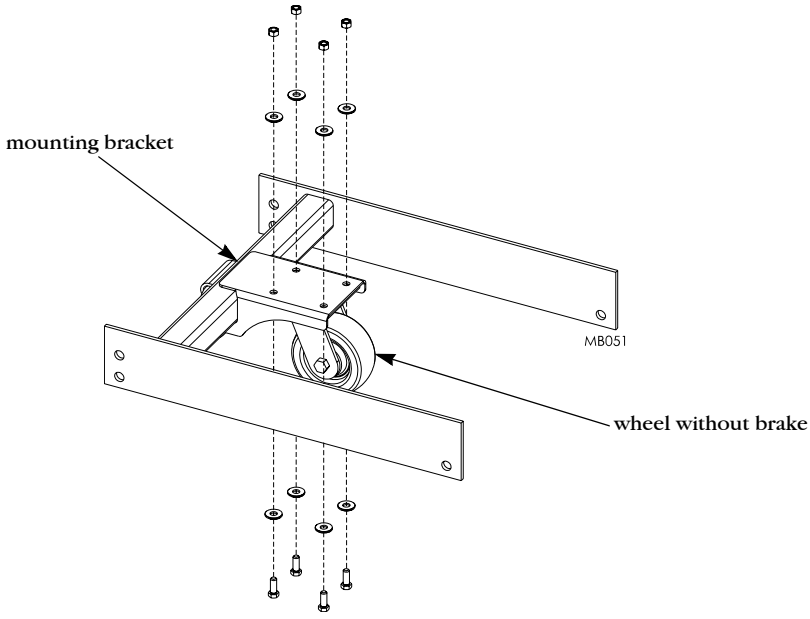

Figure 1-14: Install the Wheel to the Front Wheel Mounting Bracket

INSTALLING THE REAR WHEEL MOUNT ASSEMBLIES

1 Remove and discard the three existing bolts from the brake and the dyno; these bolts are too short.

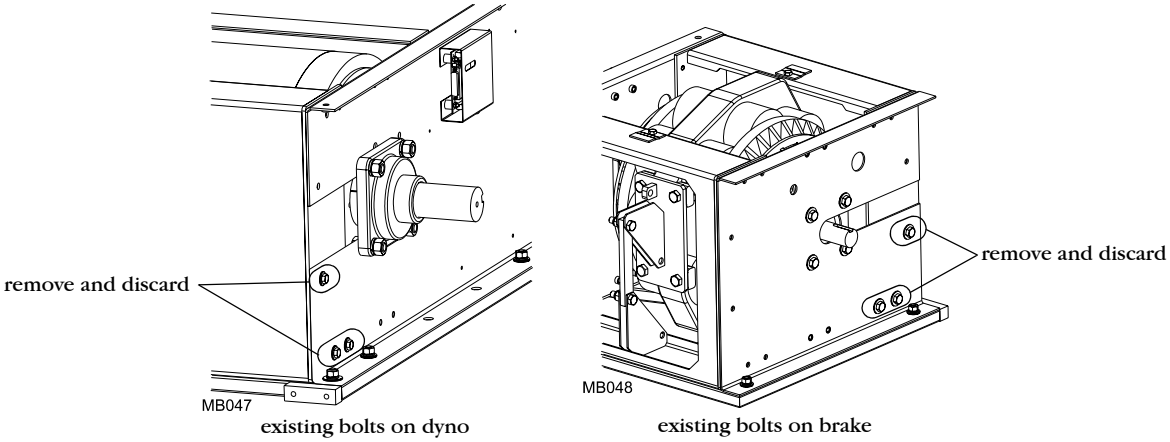

Figure 1-15: Remove the Existing Bolts

2 Secure one wheel mount to the dyno and one wheel mount to the brake using three 3/8-16 x 1-inch bolts with thread lock and three 3/8-inch washers.

3 Secure each wheel mount to the mobile base frame using two 3/8-16 x 3/4-inch bolts with thread lock and two 3/8-inch washers.

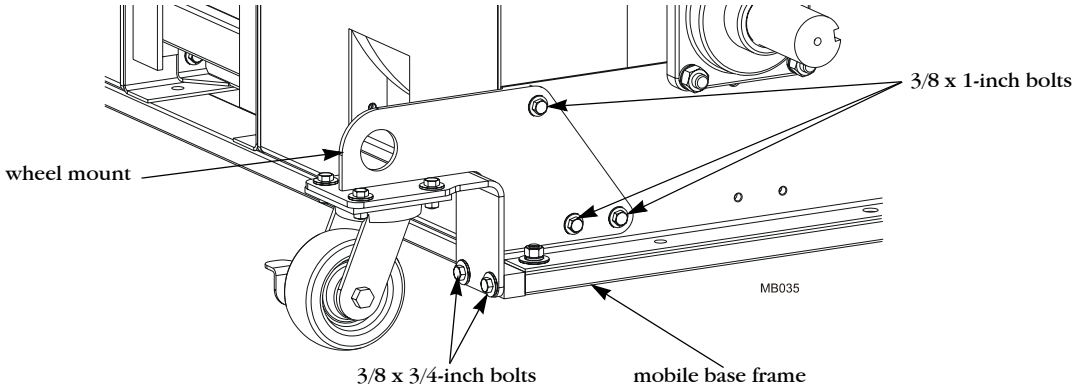

Figure 1-16: Install the Rear Wheel Mount Assemblies

TIGHTENING ALL THE BOLTS

1 Tighten the bolts securing the connecting arms to the dyno (four on each arm). Refer to Figure 1-10.

2 Tighten the four bolts securing the reinforcement brace. Refer to Figure 1-11.

3 Tighten the two bolts securing the rear wheel to the mobile base frame. Do this for both rear wheels. Refer to Figure 1-16.

4 Tighten the three bolts securing the rear wheel to the brake and the three bolts securing the rear wheel to the dyno. Refer to Figure 1-16.

5 Tighten the four bolts that secure the mobile base frame to the brake and the six bolts that secure the mobile base frame to the dyno (ten bolts total).

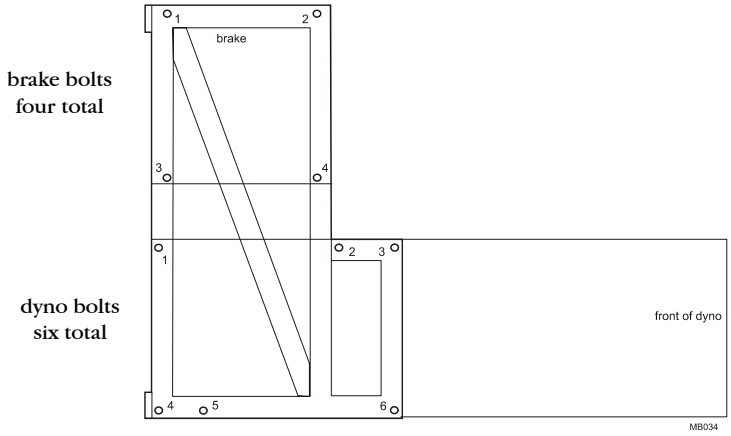

Figure 1-17: Tighten the Mobile Base Frame Bolts

INSTALLING THE FRONT WHEEL MOUNT ASSEMBLY

1 Secure the front wheel mount assembly to the dyno using six 1/2-13 x 1 1/2-inch bolts, twelve 1/2-inch washers, and six 1/2-inch nuts.

2 Tighten all six bolts (three on each side).

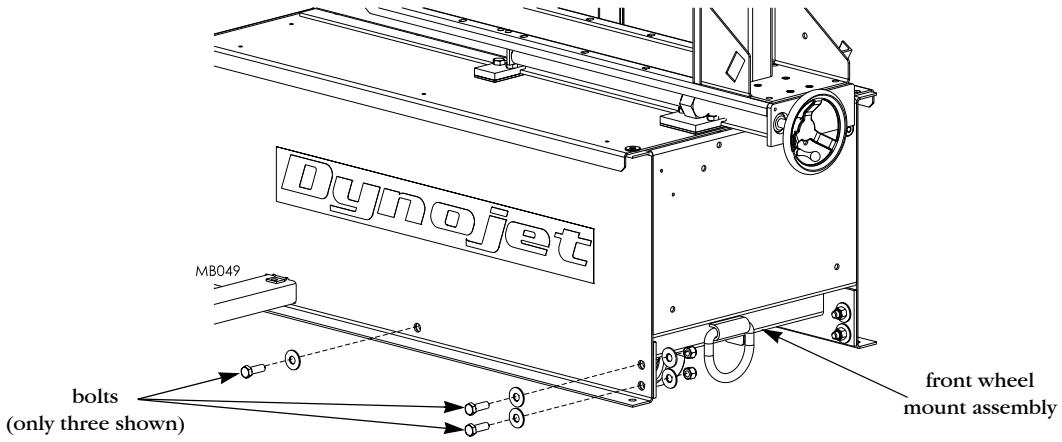

Figure 1-18: Install the Front Wheel Mount Assembly

EDDY CURRENT BRAKE

This section describes how to align the eddy current brake with the dyno, align the couplers, and attach the cables from the eddy current brake to the Theta Controller and Breakout board.

For more information about the eddy current brake, refer to the Eddy Current Brake Installation Guide (P/N 98226100).

ALIGNING THE EDDY CURRENT BRAKE

CAUTION

Eddy current brake and coupler alignment is very important. You must follow these instructions very carefully to ensure proper alignment and function. Dynojet will not warranty any coupler that is damaged due to improper installation.

1 Place a straight edge with a notch across the apex of the drum with the notch across the eddy current brake.

2 Using the straight edge as a guide, measure the distance to the collars on the axle shaft of the eddy current brake (not the black bearing lock collars).

3 Place shims between the mobile base frame and the eddy current brake or dyno until the collars are 7 19/32-inch (19.288 cm) +/- 1/16-inch (1.58 mm) down from the top of the drum on the dyno.

4 Torque all the bolts securing the connecting arms to the dyno and to the eddy current brake to 33 ft. lb. (45 N-m). Verify the height and make sure nothing has moved.

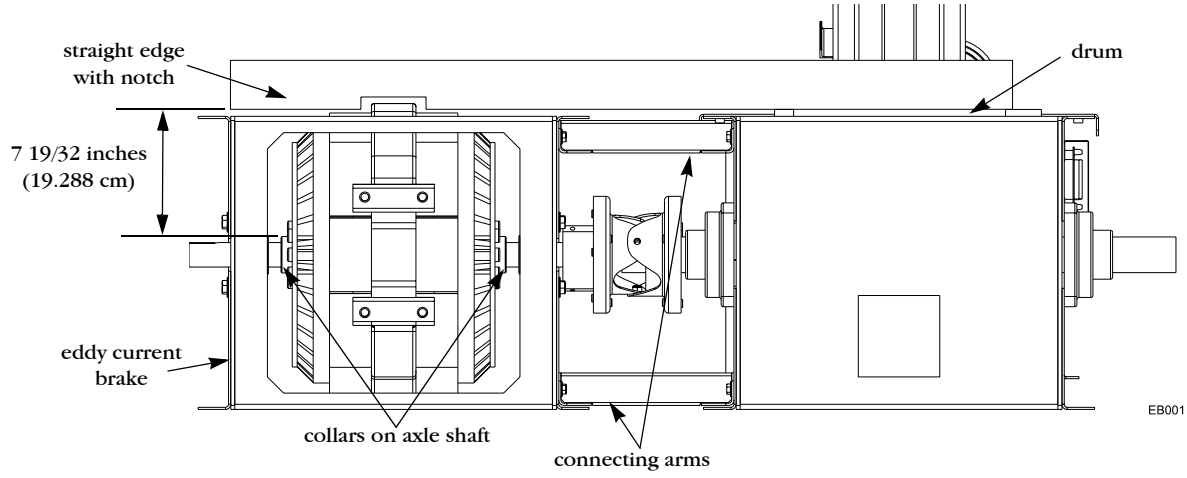

Figure 1-19: Align the Eddy Current Brake

COUPLING THE EDDY CURRENT BRAKE

CAUTION

Coupler alignment is very important. You must follow these directions very carefully to ensure proper alignment and function. Dynojet will not warranty any coupler that is damaged due to improper installation.

1 Slide the dyno coupler over the eddy current brake coupler so the three holes in each of the couplers line up.

2 Secure the couplers together using three 3/8-inch bolts removed earlier and tighten to 33-37 ft. lb. (45-50 N-m).

3 Verify the key has not moved laterally.

4 Tighten the set screws in the couplers to 24 ft. lb. (29-33 N-m).

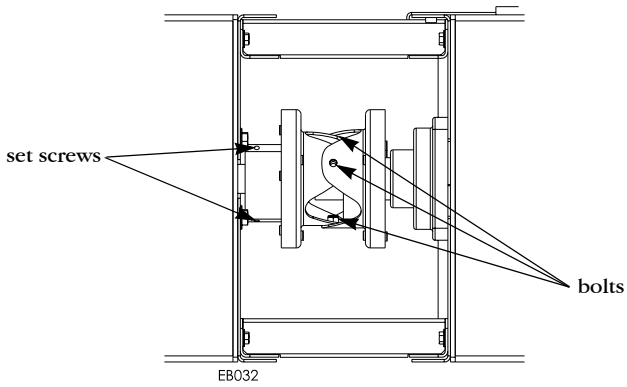

Figure 1-20: Secure the Couplers

ATTACHING THE CABLES

1 Using a fork lift, or other suitable means, remove the dyno from the blocks.
2 Route the input power cable under and out the front of the dyno.
3 Attach the input power cable to the Theta Controller.
4 Route the brake power cable through the dyno as shown in Figure 1-21 and attach the cable to the Theta Controller. Secure the rubber grommet in the hole.
5 Route the temperature sensor cable from the eddy current brake through the dyno to the Breakout board.

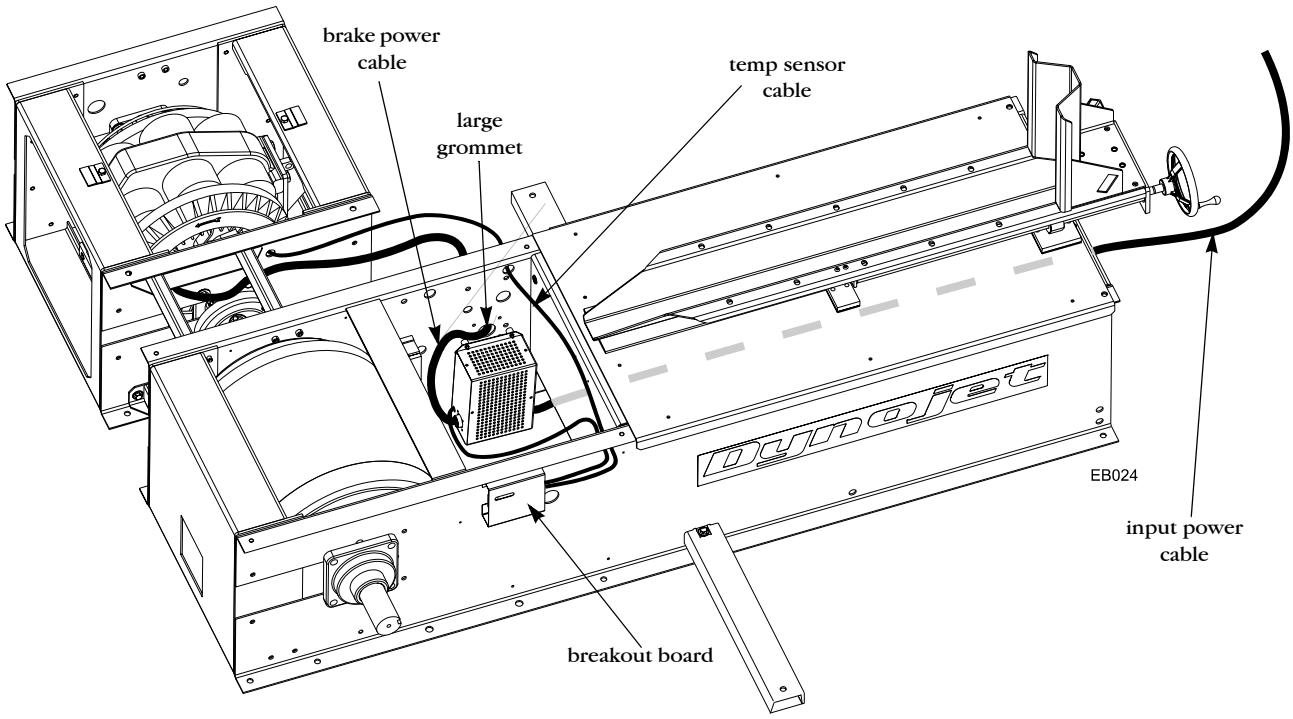

Figure 1-21: Attach the Eddy Current Brake Cables

6 Attach the temperature sensor cable to the Breakout board. The temperature sensor cable has five wires which connect to the wiring block labeled TEMP.

- Green wire connects to G1
- Black wire connects to B1
- Ground wire connects to S1
- White wire connects to W1
- Red wire connects to R1

7 Replace the Breakout board cover and secure the Breakout board and cover to the dyno frame using the four screws you removed earlier.

8 Coil the excess temperature sensor cable and secure with a cable tie.

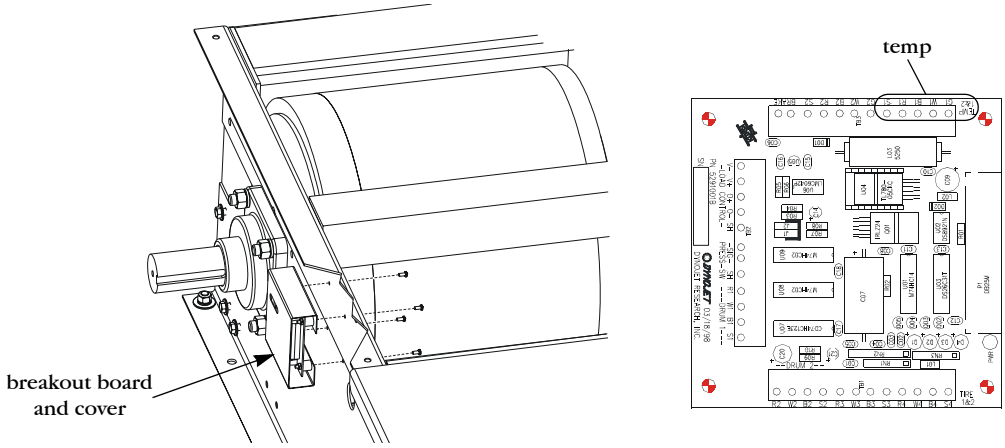

Figure 1-22: Attach the Temperature Sensor Wires to the Breakout Board

Securing the Input Power Cable and Cable Tie

1 Insert the input power cable through the cable tie.

2 Tighten the cable tie around the input power cable and trim the excess cable tie.

3 Secure the cable tie to the existing hole on the bottom of the front wheel mounting bracket using a 1/4-20 x 1/2-inch button-head screw.

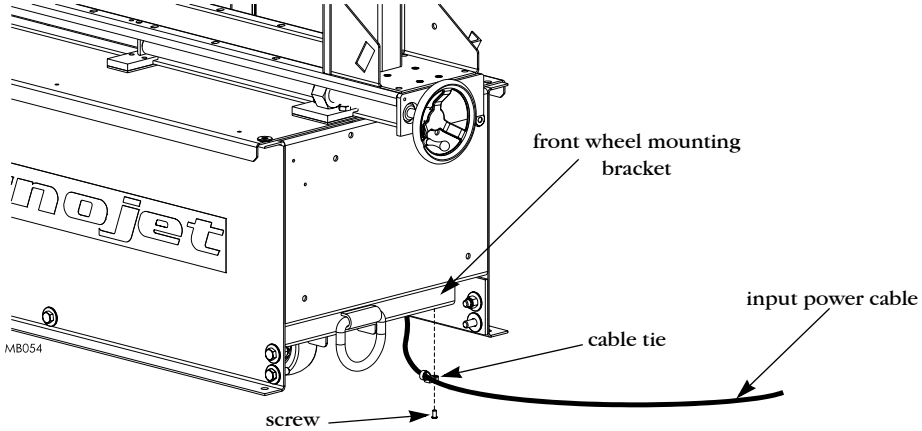

Figure 1-23: Secure the Input Power Cable and Cable Tie

FINAL INSTALLATION

This section describes how to modify your hood, install the ground hooks, and secure your dyno for use.

MODIFYING AND INSTALLING THE HOOD

The hood will need to be modified in order to fit over the mobile base rear wheels.

1 Using the measurements in Figure 1-24, make the necessary cuts in the hood.

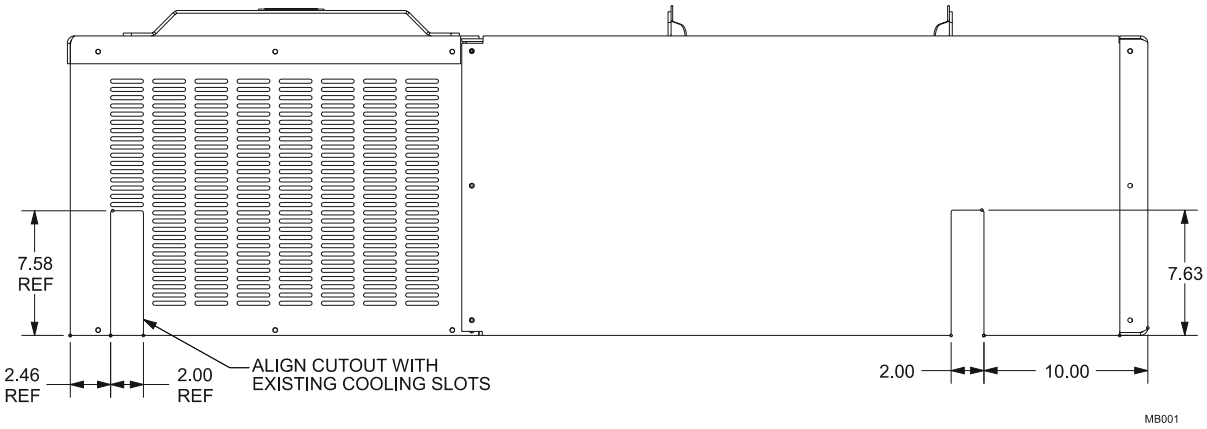

Figure 1-24: Modified Hood Measurements

2 Verify the bolts and the set screws on the couplers are tight.

3 Place the modified hood on the dyno leaving it propped up. Secure the key switch, if present, and connect the battery.

4 Lower and secure the hood using the four bolts you removed earlier. Refer to Figure 1-2.

5 Secure the hood clamps to the brake using the two bolts you removed earlier. Refer to Figure 1-1.

6 Replace and secure the brake cover using the four bolts you removed earlier. Refer to Figure 1-1.

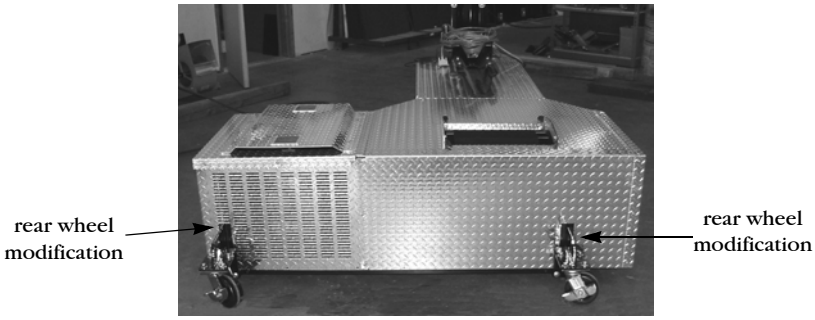

Figure 1-25: Install the Modified Hood

INSTALLING THE GROUND HOOKS

1 Locate the dyno in your dyno room and place the eye of each ground hook approximately thirty-six inches from the eye of each dyno wheel.

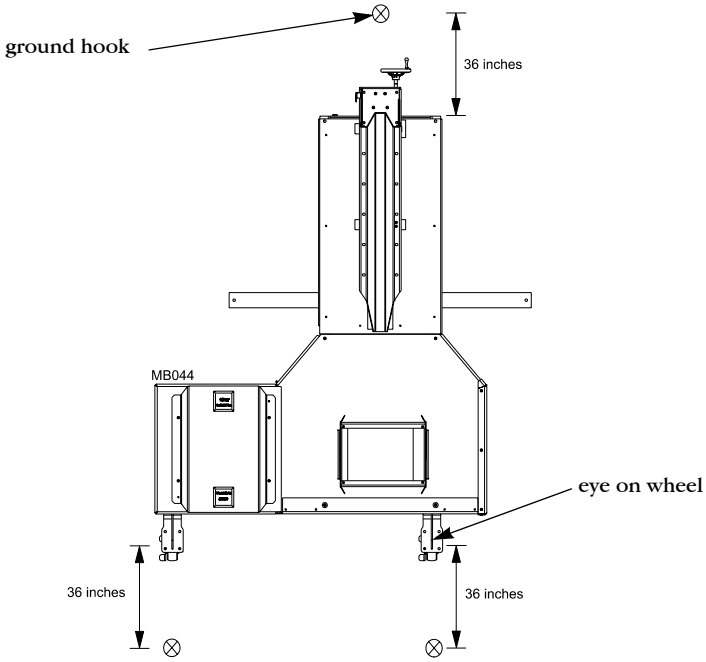

Figure 1-26: Ground Hook Placement

2 Install the Red Head Anchors using the hardware included with the ground hook kit. Refer to Appendix A for Red Head Anchor installation instructions.

Use the ground hooks as a pattern to place the anchors.

3 Install each ground hook using the hardware included with the ground hook kit.

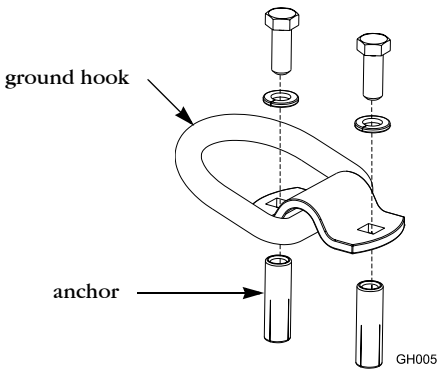

Figure 1-27: Install the Ground Hook

SECURING THE DYNO

1 Secure the dyno to the ground hooks using tie down straps.
Note: Crossing the straps in the back will increase stability.

2 Remember to reinstall the fan if you removed it earlier.

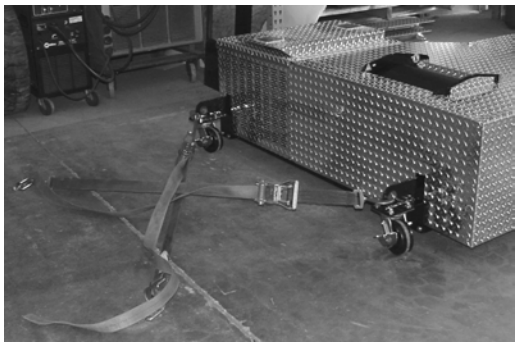

Figure 1-28: Secure the Dyno to the Rear Ground Hooks

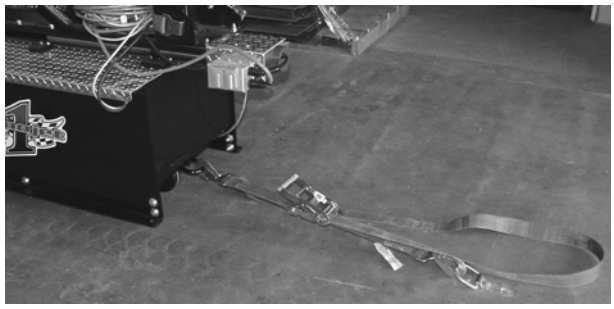

Figure 1-29: Secure the Dyno to the Front Ground Hook

APPENDIX

A

RED HEAD ANCHOR INSTALLATION

This appendix contains instructions for installing the Red Head Multi-Set™ II Anchors used to secure ground hooks to concrete. The anchors and ground hooks will be used to secure the mobile base dynamometer. To ensure safety and accuracy in the procedures, perform the procedures as they are described. Be sure to read and understand the warnings included in this appendix.

Refer to page 1-18 for instructions on installing the ground hooks.

WARNINGS

WARNING

Always wear safety glasses and other necessary protective devices or apparel when installing or working with anchors.

CAUTION

ITW Ramset/Red Head Multi-Set II Anchors are designed to operate properly only when installed with ITW Ramset/Red Head brand Setting Tools.

The use of a 24 to 40 ounce hammer is recommended for expanding Multi-Set II anchors.

The use of carbide drill bits manufactured with ANSI 894. 12-77 drill bit diameter requirements is recommended for installation of this anchor.

Not recommended for use in lightweight masonry material such as block or brick.

Use of core drills is not recommended to drill holes for use with this anchor.

Not recommended for use in new concrete which has not had sufficient time to cure.

Anchor spacing and edge distance requirements (anchor installation locations) are the responsibility of the engineer of record.

CONTACT INFORMATION FOR ITW RAMSET/RED HEAD

Contact ITW Ramset/Red Head at 1-630-350-0370, or 1300 North Michael Drive, Wood Dale, IL 60191.

INSTALLATION

Use the table below to determine the catalog number, drill bit size, minimum hole depth, and setting tool catalog number.

catalog number	drill bit size	minimum hole depth	setting tool catalog number
Carbon Steel RM-38/RL-38 (9.5 mm)	1/2-inch	1 5/8-inch (41.2 mm)	RT-138

Use the following instructions to install the Red Head anchors.

1 Drill the hole in the concrete the same outside diameter as the anchor being used to any depth exceeding minimum embedment.

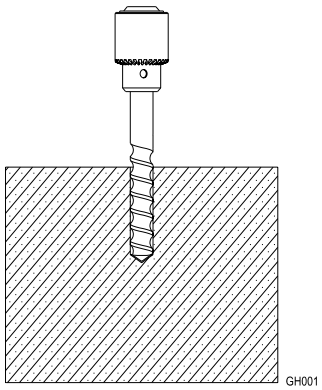

Figure A-1: Red Head Anchor—Drill the Hole

2 Insert the anchor.

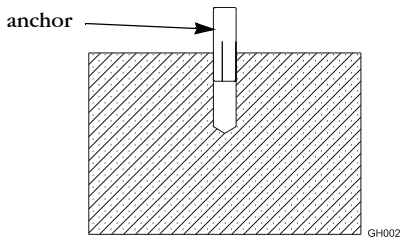

Figure A-2: Red Head Anchor—Insert the Anchor

3 Using a hammer, drive the anchor flush with the surface of the concrete, or below the surface if the hole depth exceeds minimum embedment.

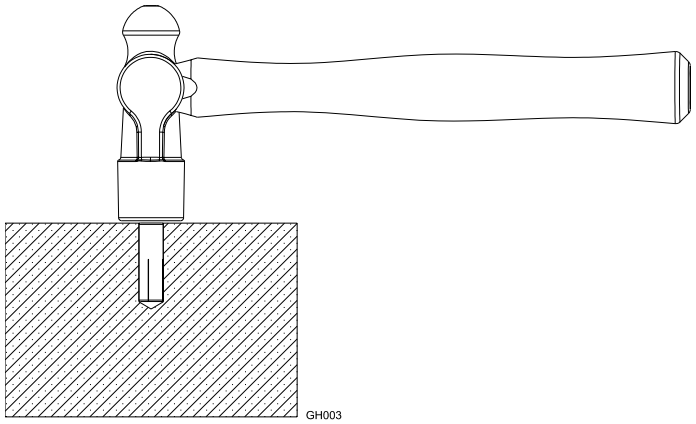

Figure A-3: Red Head Anchor—Drive the Anchor Flush

4 Using a hammer, expand the anchor with the setting tool. The anchor is properly expanded when the shoulder of the setting tool is flush with the top of the anchor.

Note: Use only Ramset/Red Head setting tools to insure proper installtion.

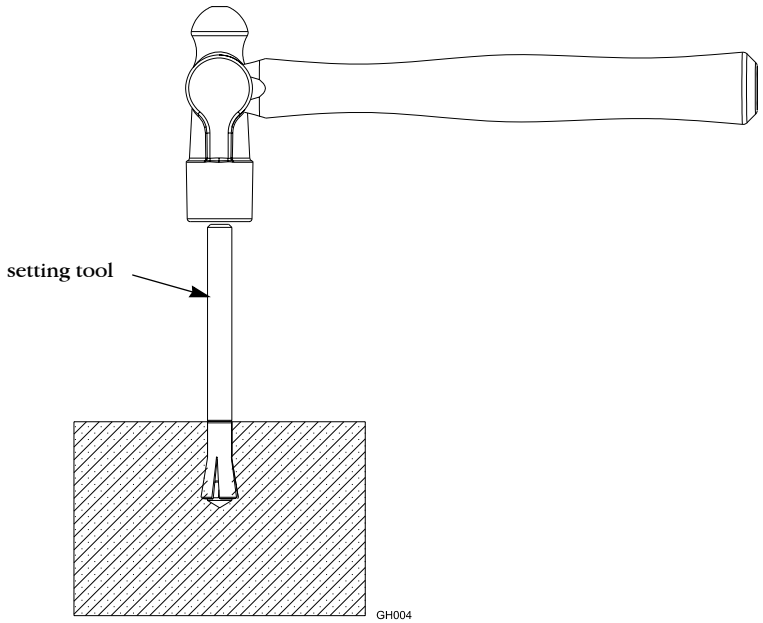

Figure A-4: Red Head Anchor—Expand the Anchor